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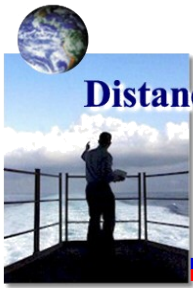
**Anchor Desk**

*I need to . . .*

***Distance Support  
Bandwidth  
Mitigation***

**FLSIC Meeting**

---



**Distance Support**

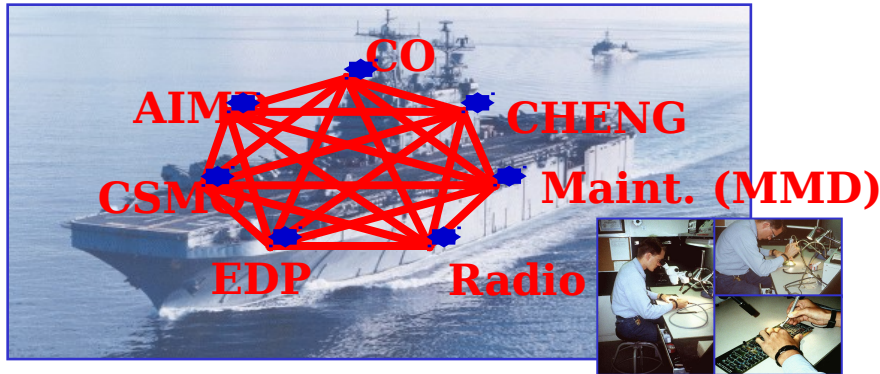
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# *The Bandwidth Challenge*

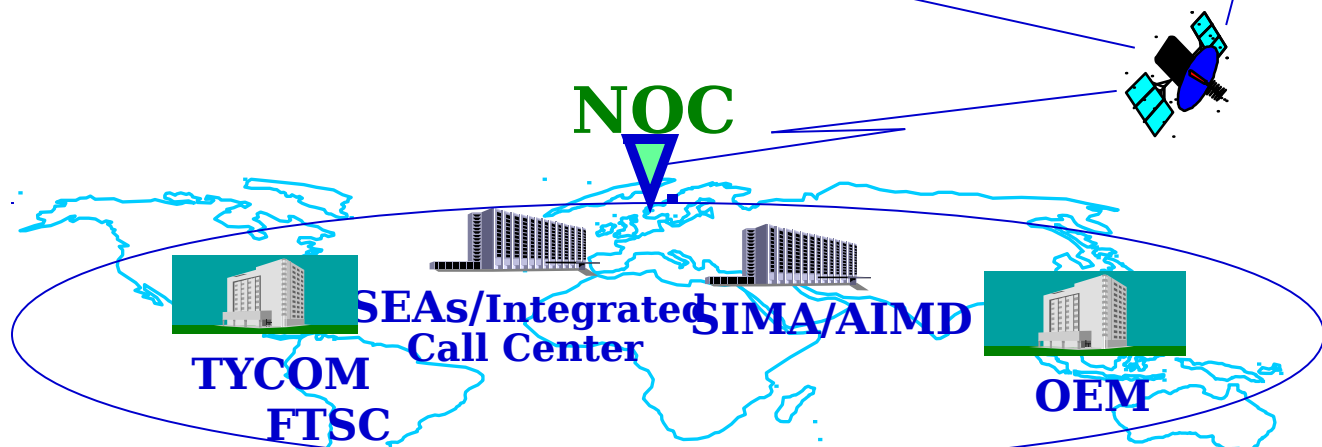
## *"Four Problem Areas"*



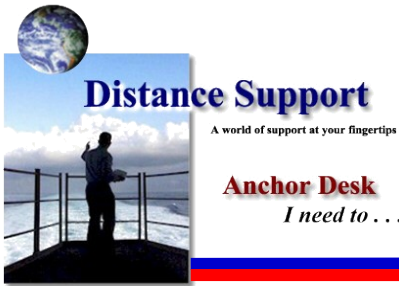
*Intra-Ship*



*Ship to Ship*



*Ship to Shore & Shore to Shore*

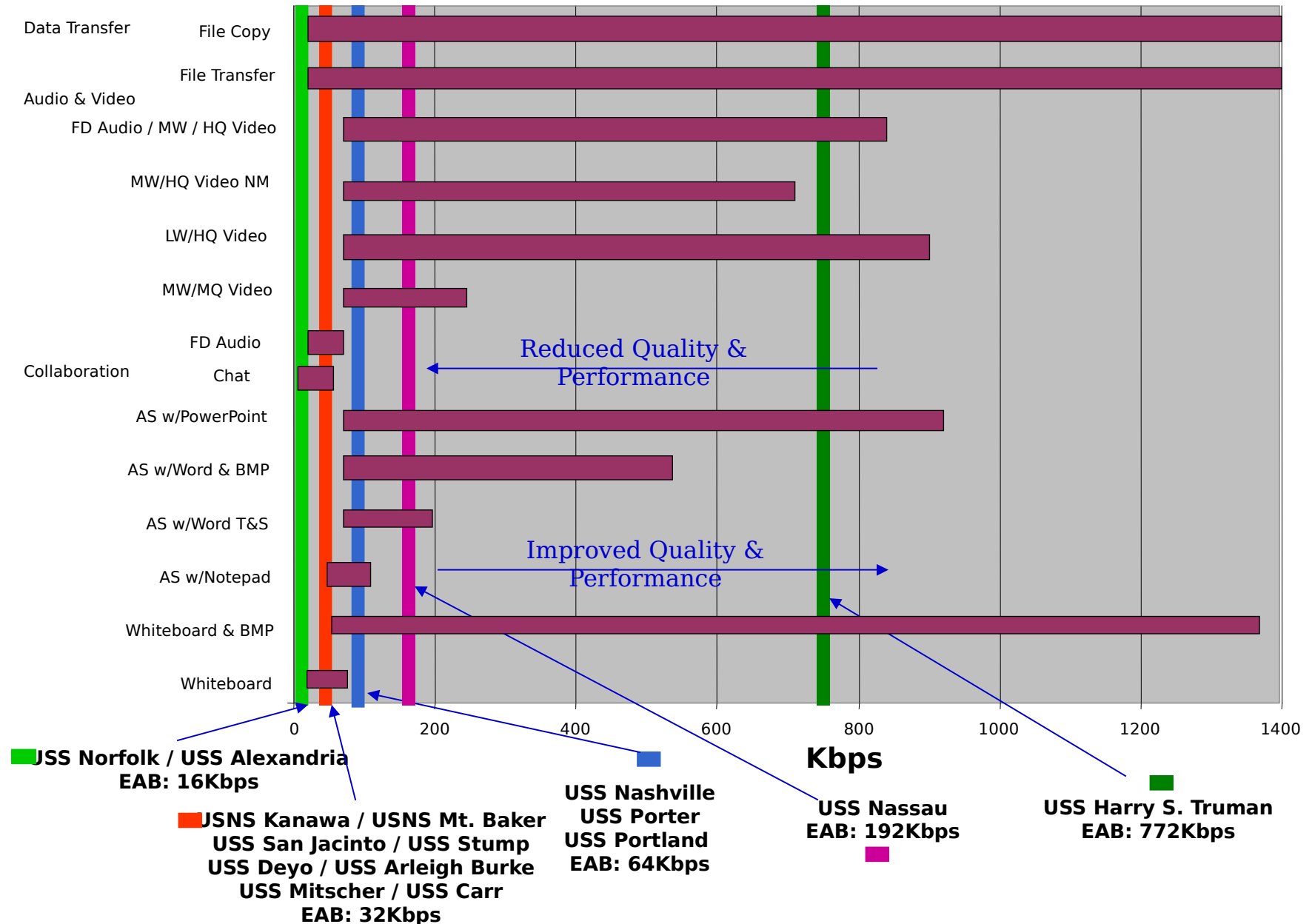


# *The Issues*

- Ship to Ship & Ship to Shore
  - ◆ Network capacity varies greatly by ship type
  - ◆ No Logistics dedicated band
    - Shared leftover
    - Growing competition for bandwidth
  - ◆ Stable continuous connectivity
    - Satellite footprint
    - Antenna blockage
- Intra-Ship
  - ◆ Stable connectivity Off-Ship
    - Enclaves of local area networks
    - Indiscriminate Blockage at ADNS
      - ◆ FIFO queuing
- Shore to Shore
  - ◆ Network capacity varies by location
  - ◆ Mobile coverage

# USS Harry S Truman Battle Group

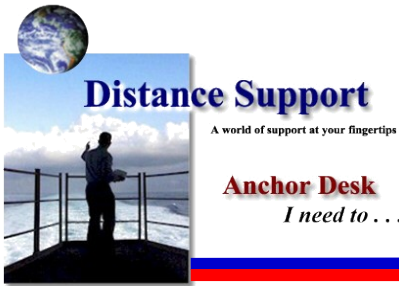
## Bandwidth Availability by Platform and Functional Requirements



**EAB = Estimate Available Bandwidth**

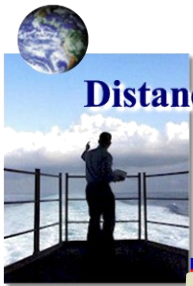
# ***DS Approach***

- The approach resolve bandwidth issues in order of serverity
  - ◆ Ship to Ship and Ship to Shore
  - ◆ Intra-ship
  - ◆ Shore to Shore
- The approach addresses management of Information, Transactions and Collaboration
- The approach focus on Bandwidth Mitigation by:
  - ◆ Minimizing the transport of data by:
    - Ship Platform resident Data (80/20 rule)
    - Process Changes
    - Local area processing
    - Auto update and synchronization
    - Data compression
  - ◆ Providing control and flexibility to adapt with:
    - Bandwidth application management
    - Off-line data capture and collaboration control



# ***Enabling Technologies***

- **Data Updates and Transfers (Computer to Computer)**
  - ◆ **iORA (Auto update and synchronization)**
  - ◆ **Magic-E (Data compression manager)**
    - **Bandwidth Compression Pilot**
  - ◆ **Galaxy (Data compression)**
- Data Capture / Conversation (Collaboration)
  - ◆ RTASS (Collaboration manager)
- Data Transport Management
  - ◆ BMAC (Bandwidth application management)
  - ◆ Ask Jeeves (Intelligent Search)



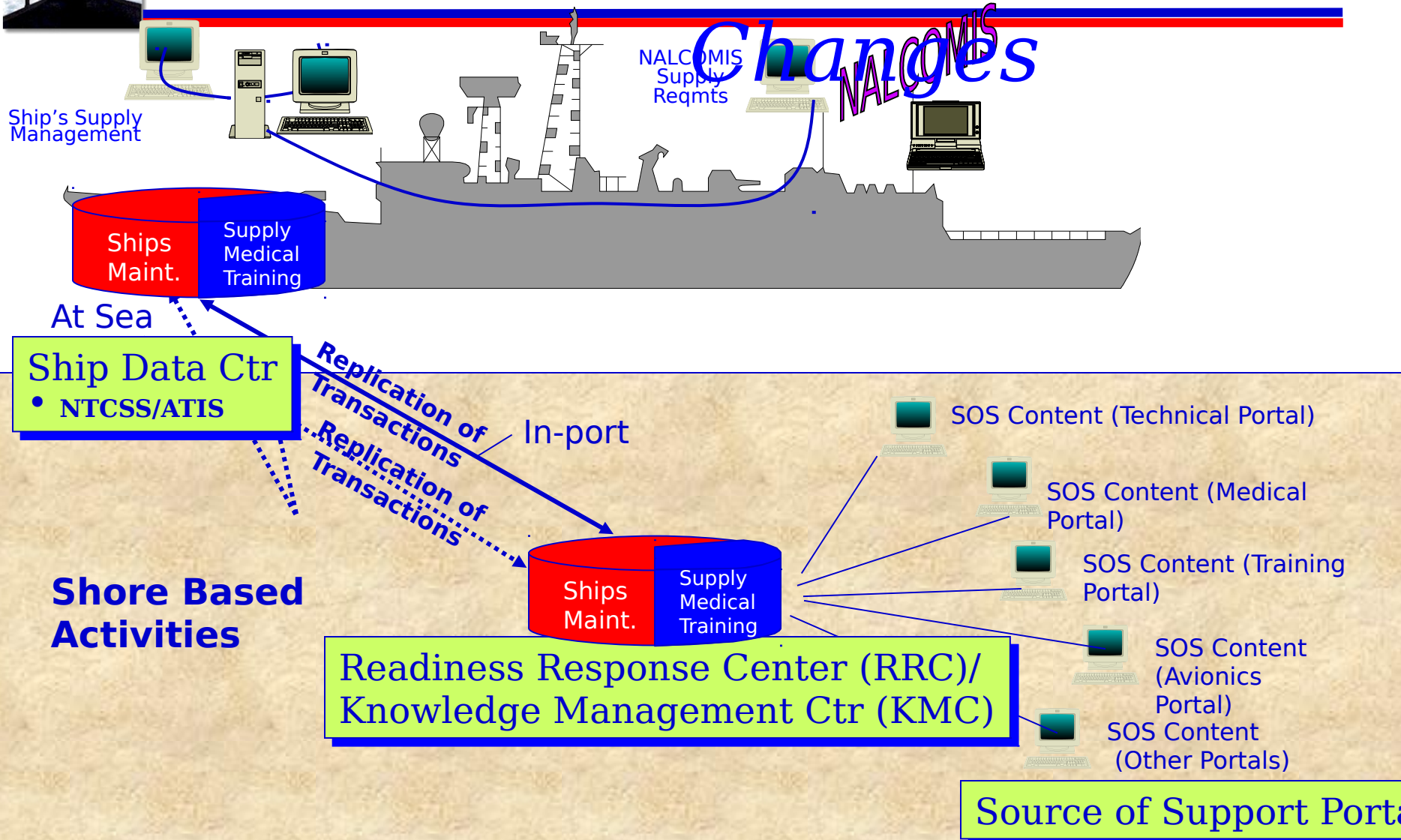
**Distance Support**

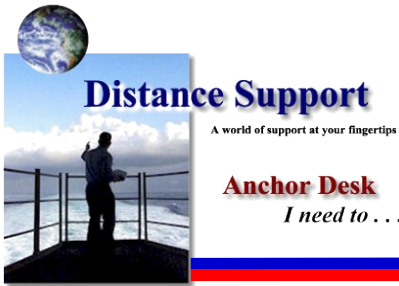
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# Platform Resident Data & Process



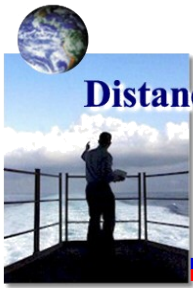


# *Auto Update and Synchronization*

## *iORA*

- Bandwidth mitigation tool
  - ◆ Transparent to Users
  - ◆ Provides high speed updates and data transmission
  - ◆ Reduced file and packet size (**10 to 100 times**)
  - ◆ Utilizes Epsilon compression to further reduce file size
  - ◆ Intelligent download
    - Files are downloaded in the background when a connection is established
  - ◆ Auto Update
    - iORA checks and downloads only new amendment file at connection





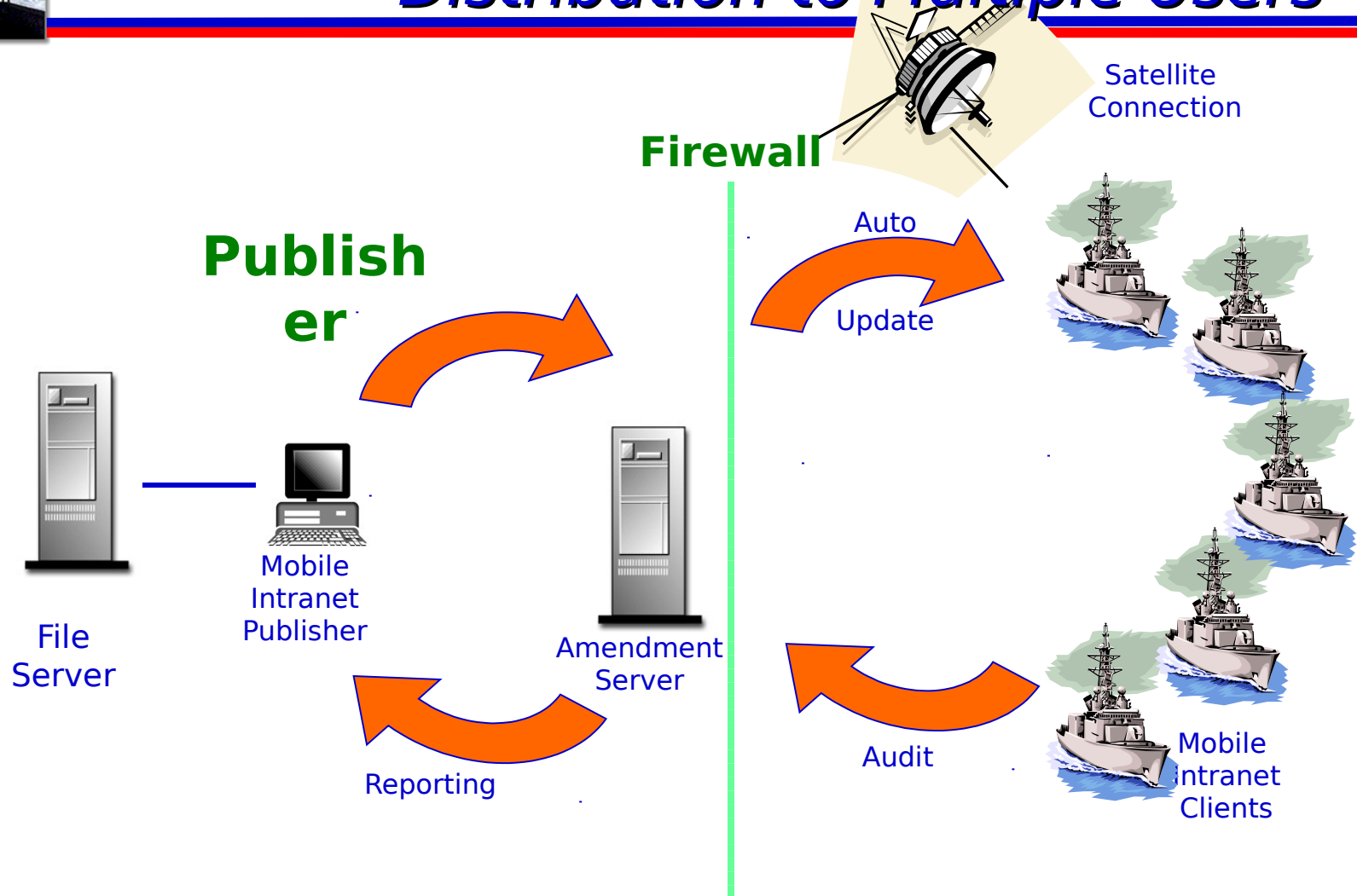
**Distance Support**

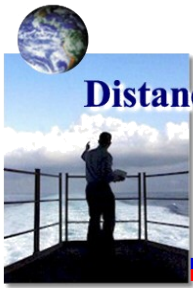
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# Auto Update and Synchronization Distribution to Multiple Users





Distance Support

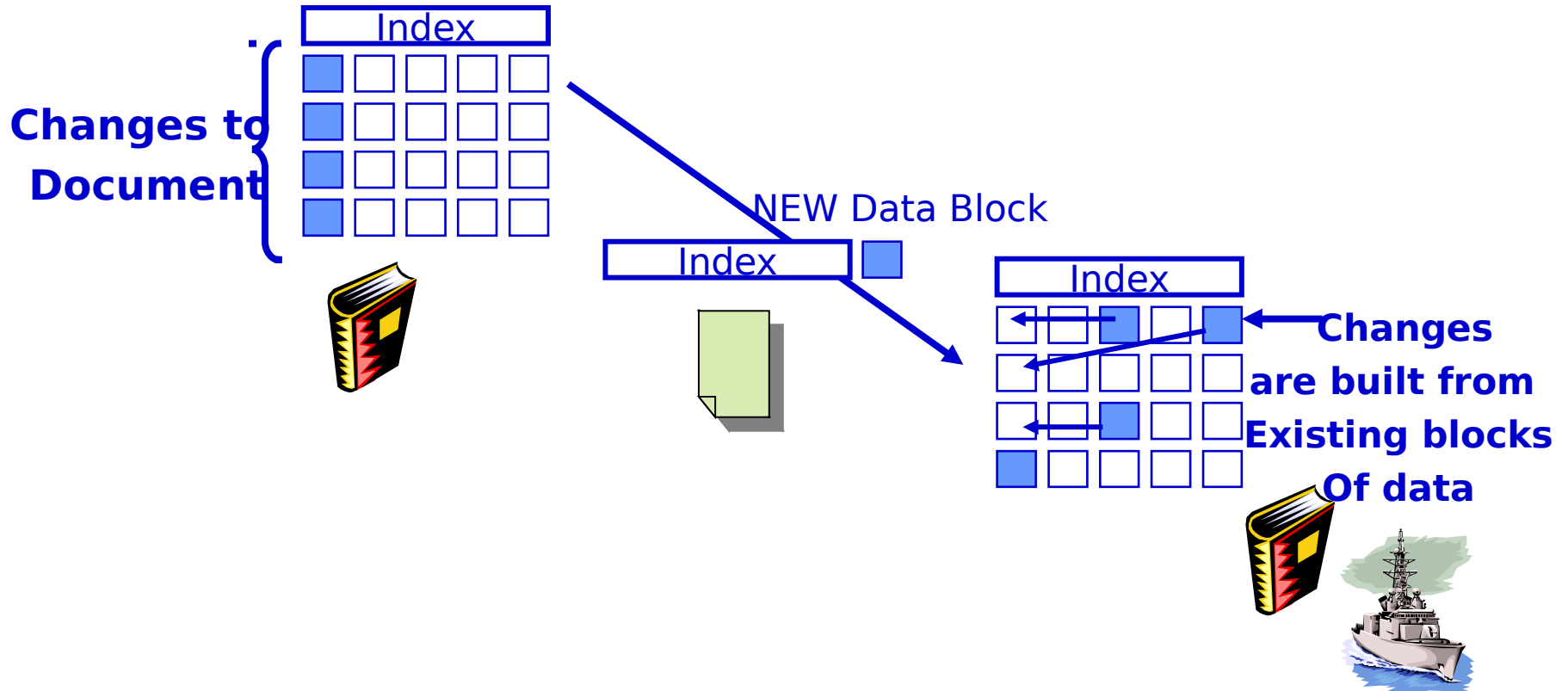
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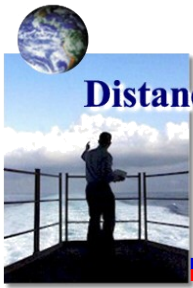
I need to . . .

# What is Unique about Epsilon?

## *Epsilon sends LESS than the Changes!*



**Document Changes are built from an Index, NEW blocks of data and Existing blocks of Data!**



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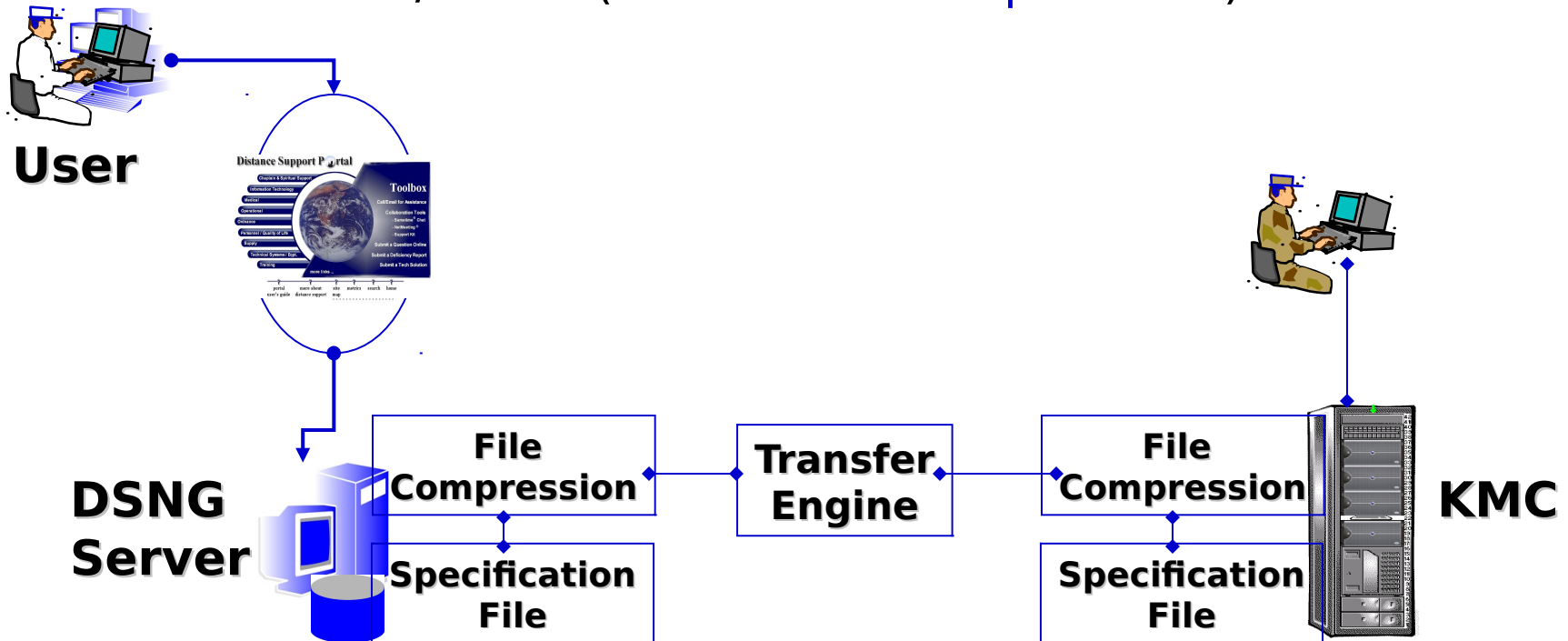
*I need to . . .*

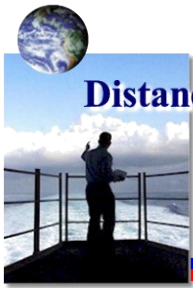
# Data Compression

## NAVSUP Pilot (Magic-E Software)

### ➤ Data Compression pilot will:

- ◆ Demonstrate the capability of compressing data, both digital (data lossless up to 10:1) and video/sound (**visual lossless up to 50:1**)





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# Compression Technologies



## Fractal

- Patterns, not original image, are analyzed
- Difficult to compress
- Fast Decompression (from the equations)
- Scalability (interpolates but with errors, distortion)

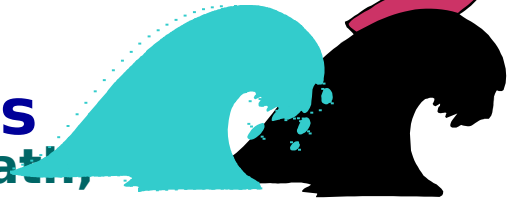


## JPEG

adjustable, best lossless under 5:1 discrete cos. transforms; leftover is Huffman encoded, blocks artifacts above 30:1,

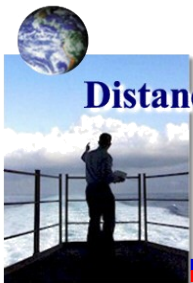
## Wavelets

- Fourier Math,
- High/Low pass,
- No color edges or color on color
- Goes up to 150:1 quality,
- Uses error tolerant bit-stream



and now  
GalaxyVue's™  
breakthrough  
technology called  
**TDE**, or  
TEMPORAL  
DIFFERENTIAL  
ENCODING-TDE





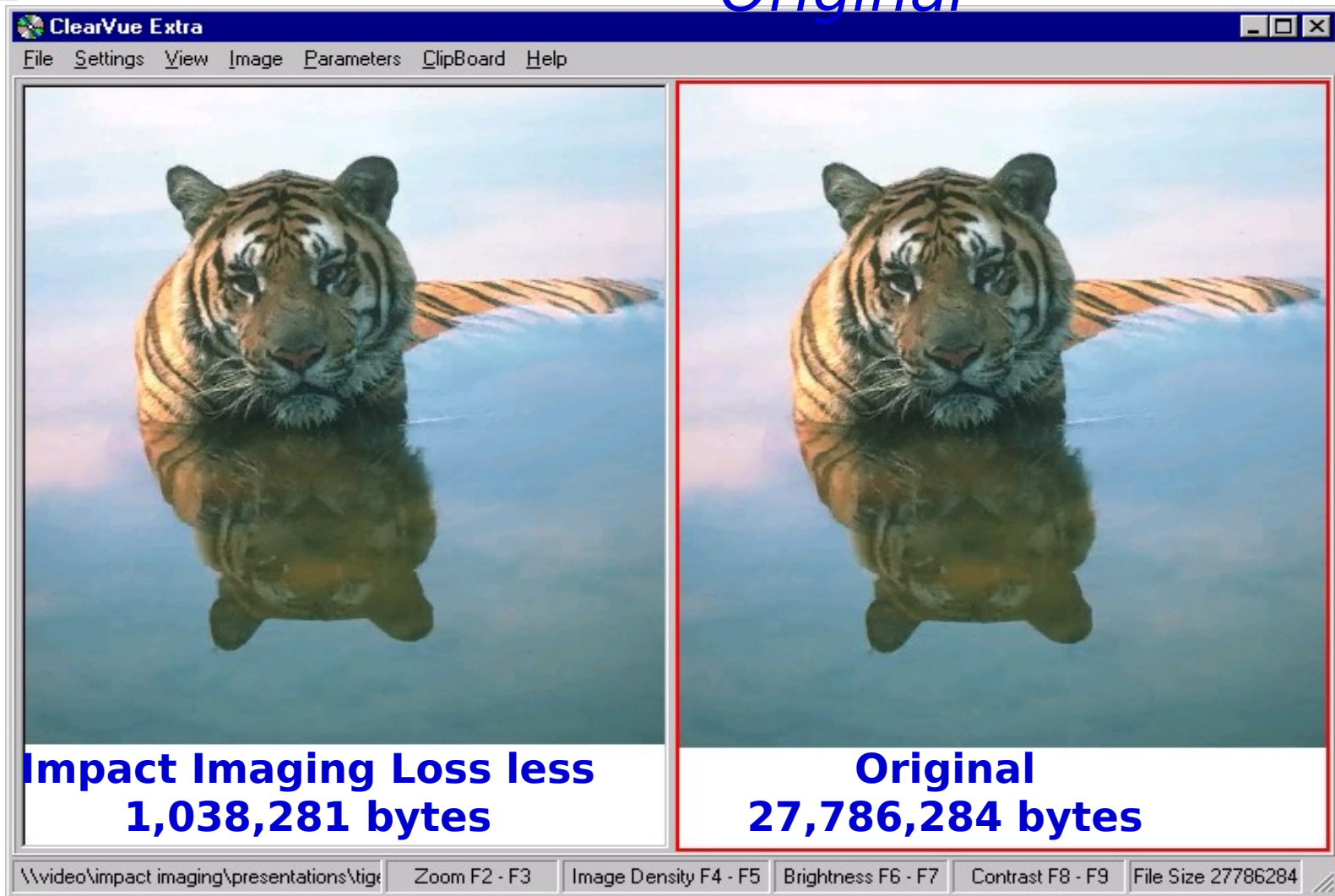
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# GalaxyVue Loss less Compression Ratio 27:1 vs. *Original*







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# *GalaxyVue Lossy Compression Ratio 2800:1 vs. JPEG Lossy Compression Ratio 100:1*

**ClearVue Extra**

File Settings View Image Parameters Clipboard Help

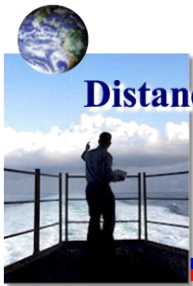


**Impact Imaging Lossy**  
**9,924 bytes**



**JPEG Lossy**  
**267,782 bytes**

\\video\impact imaging\presentations\tigr Zoom F2 - F3 Image Density F4 - F5 Brightness F6 - F7 Contrast F8 - F9 File Size 276782



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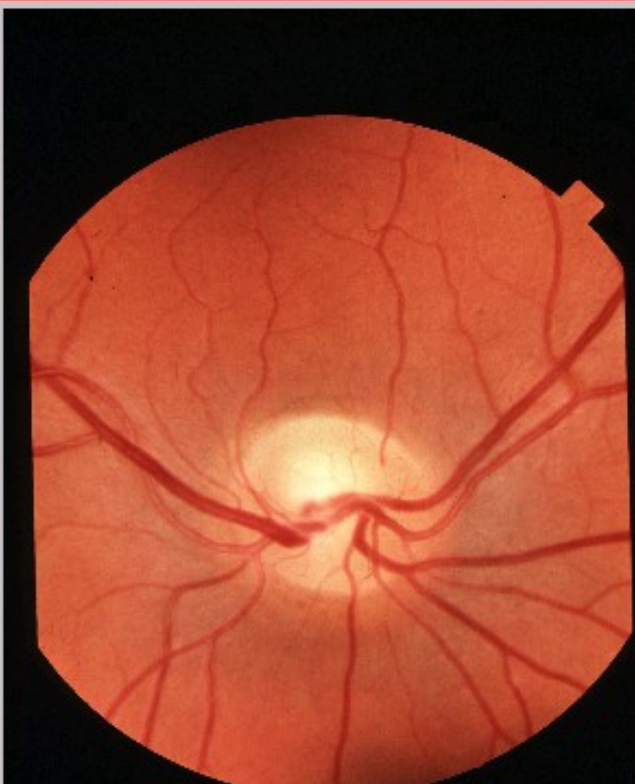
# GalaxyVue Visually Loss less Compression Ratio 147:1 vs. JPEG Visually Loss less Compression Ratio 19:1

**ClearVue Extra**

File Settings View Image Parameters ClipBoard Help

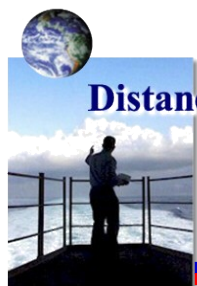


**Impact Imaging**  
**Visually Loss less**  
**169,336 bytes**



**JPEG**  
**Visually Loss less**  
**1,309,336 bytes**

\\video\impact imaging\presentations\rec Zoom F2 - F3 Image Density F4 - F5 Brightness F6 - F7 Contrast F8 - F9 File Size 24851744



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# **GalaxyVue Visually Loss less Compression Ratio 147:1 vs. LauraWave Visually Loss less Compression Ratio 21:1**

**ClearVue Extra**

File Settings View Image Parameters Clipboard Help




**Impact Imaging  
Visually Loss less  
169,336 bytes**

\\video\impact ima    Zoom F2 - F3    Image Density F4 - F5

**Redeye (vis los).LWF - ACDSee v3.1**

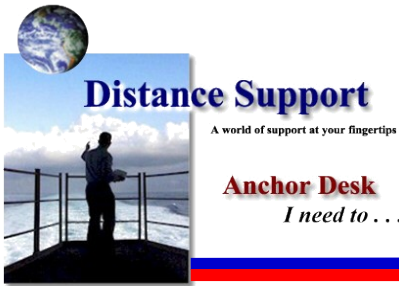
File Edit View Zoom Tools Plug-ins Help



**LauraWave  
Visually Loss less  
1,162,836 bytes**

5/6    [LWF] Redeye (vis los).LWF    1.1 MB    2350x3525x24b lwf    14%    Loaded in 91.4 s



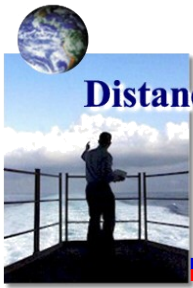


# Summary

- Distance Support focus on four bandwidth problem areas
  - ◆ Ship to Ship
  - ◆ Ship to Shore
  - ◆ Intra-Ship
  - ◆ Shore to Shore
- The enabling technologies used for bandwidth mitigation consist of:
  - ◆ Managing what needs to be transported
  - ◆ Managing how it is transported
  - ◆ Managing the preparation and prioritization for transport
  - ◆ Changing processes to alleviate the need for the above
- Teaming and Pilots are continuing at a greater pace
  - ◆ Consideration in design for TFW, NMCI, ERP, JDSR
  - ◆ Teaming with SPAWAR NTCSS, Smartship TSM, CNET NLC
  - ◆ PACFLT and LANTFLT MME initiatives

# Questions





**Distance Support**

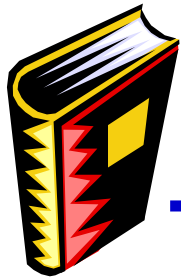
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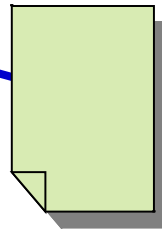
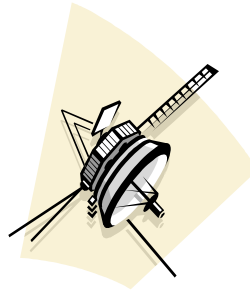
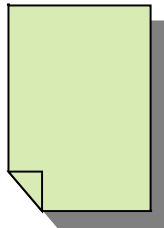
*I need to . . .*

# *Epsilon Technology*

**iOra Publisher**



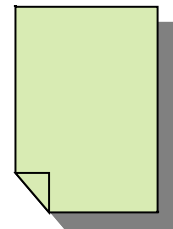
+



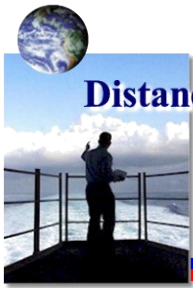
**iOra client  
Re-builds  
the manual**



+



**Only Sending the Changes uses much Less  
Bandwidth!**



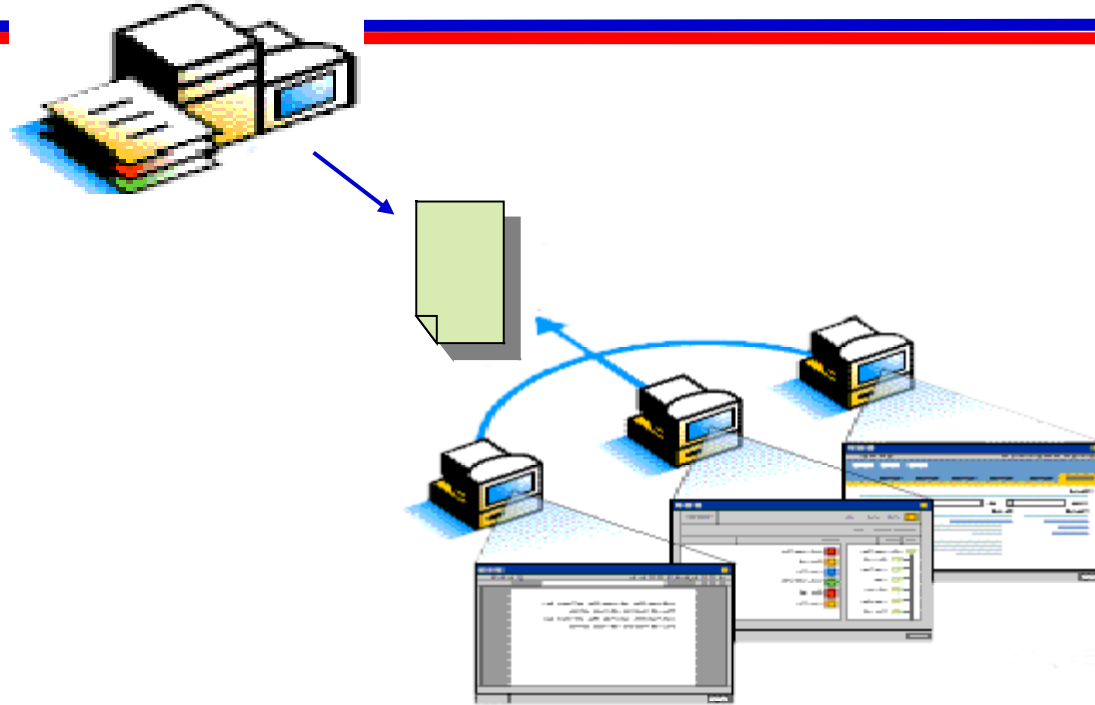
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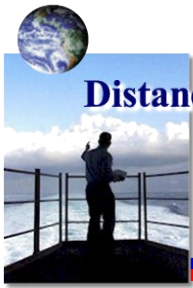
*I need to . . .*

# *iOra Mobile Intranet for MS SharePoint Portal*



- Portal info Available off Line
- Updates VIA Epsilon
- Off-Line Search Engine

**Take SharePoint Off Line!**



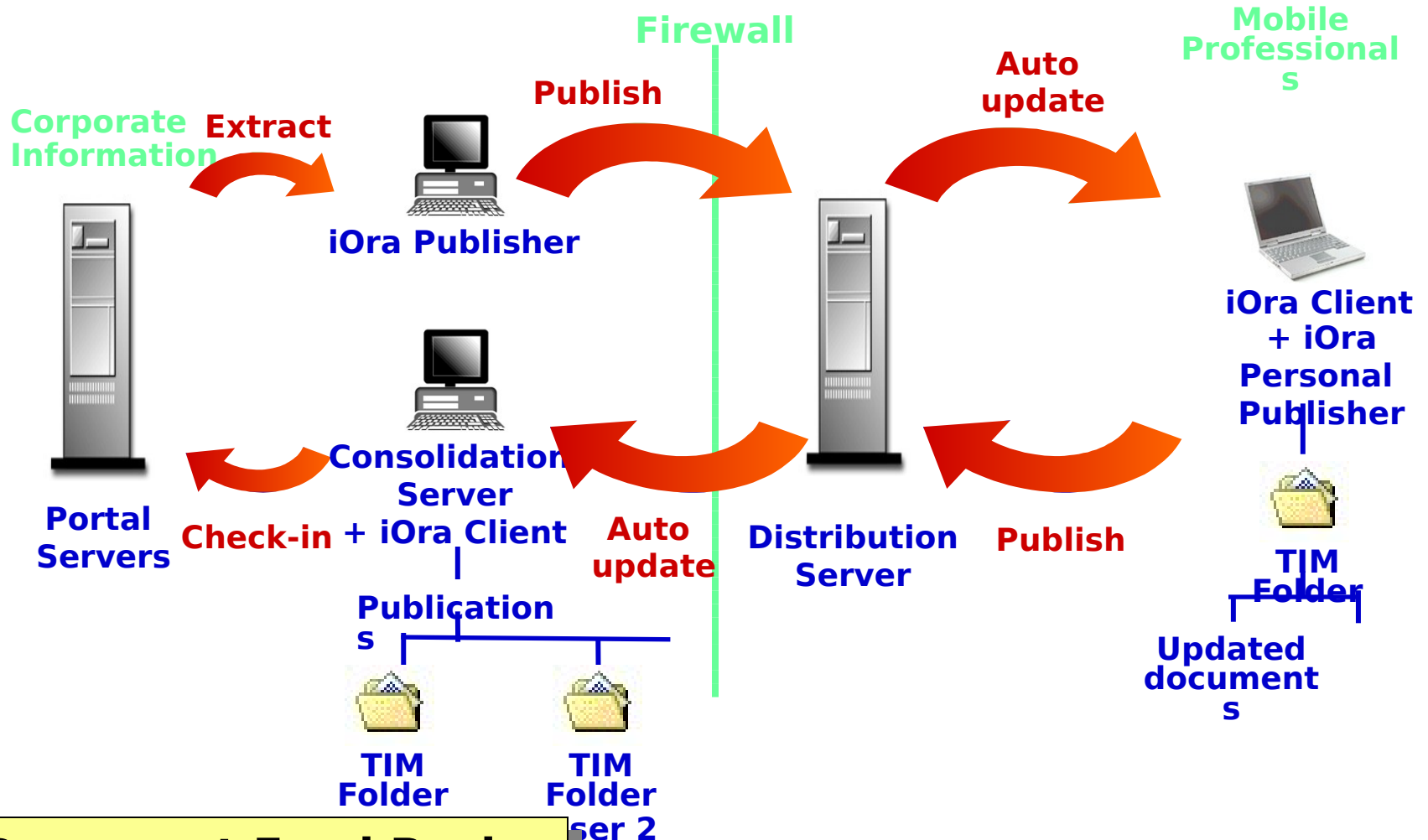
Distance Support

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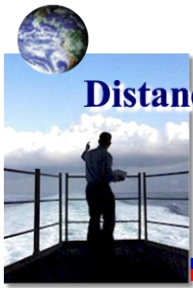
Anchor Desk

I need to...

# 2 Way Document Management



**Document Feed Back**



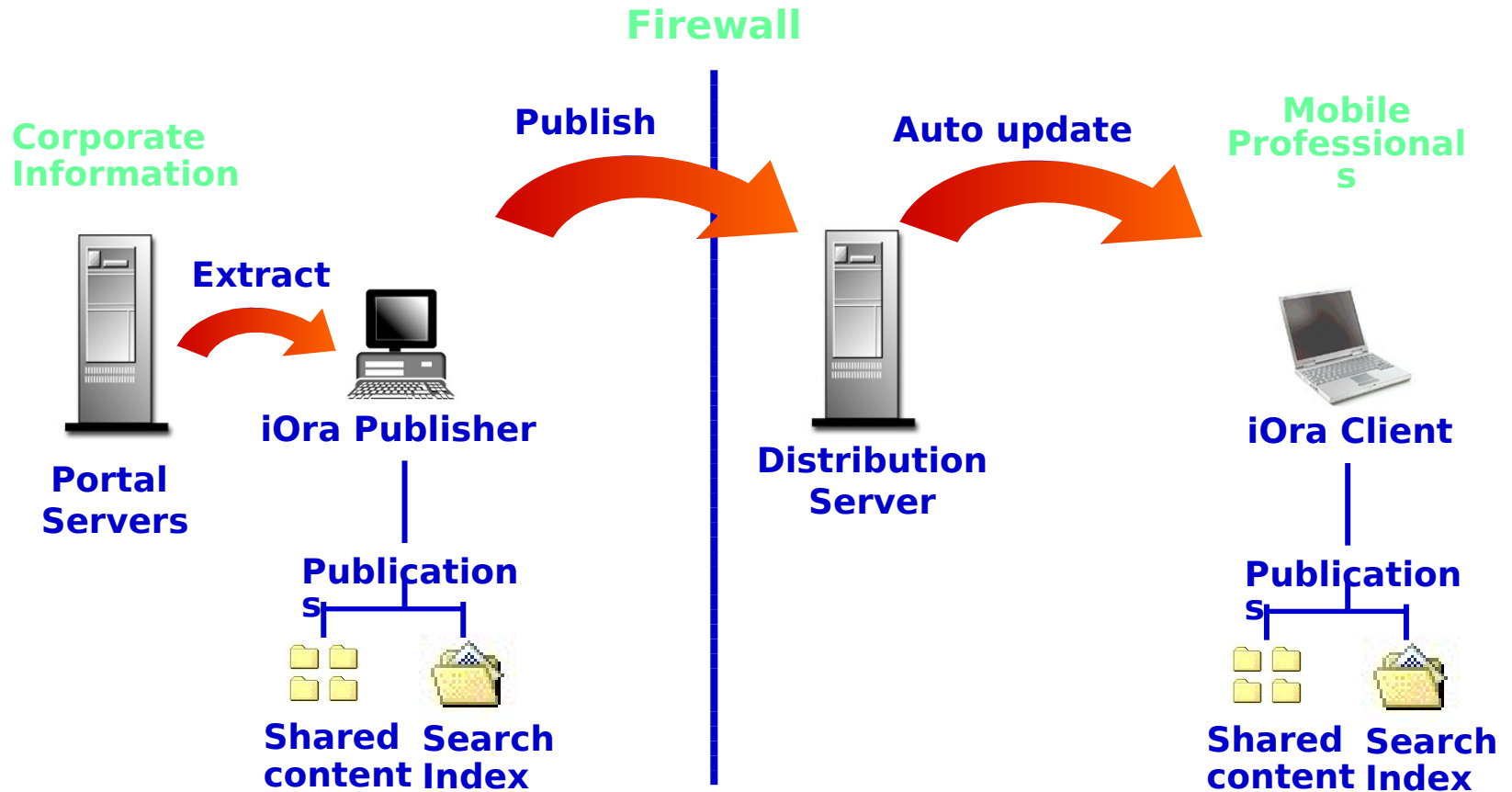
**Distance Support**

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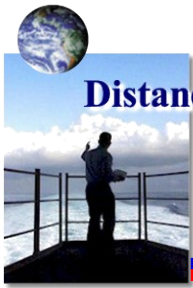
**Anchor Desk**

*I need to . . .*

# Offline Search



**Search Any Portal Document  
Type...Off Line!**

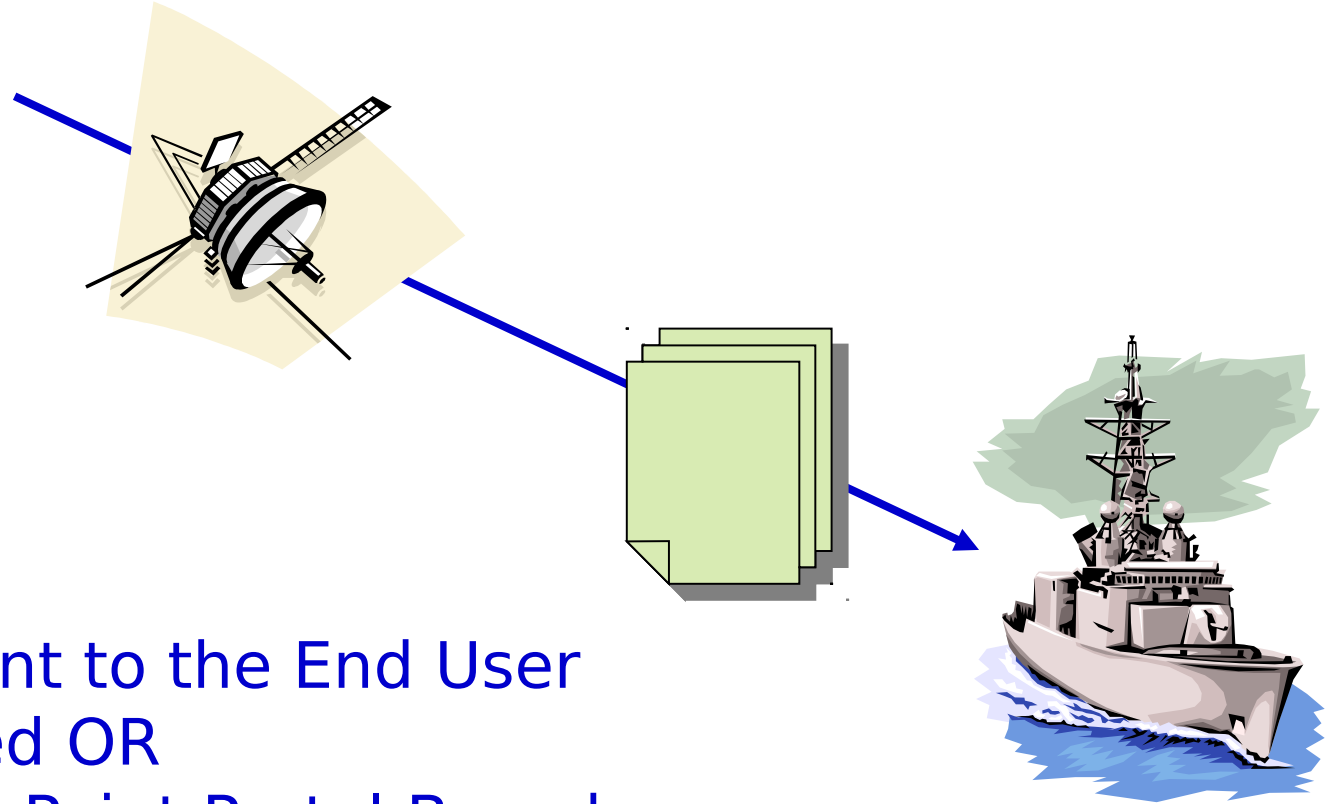


**Anchor Desk**

*by*



# iOra Mobile Intranet Conclusion



Transparent to the End User

- File Based OR
- MS SharePoint Portal Based
- 10/100 Times faster than normal Compression